2019

PG Even Semester (CBCS) Exam., May—2019

ECONOMICS

(4th Semester)

Course No. : ECOCC–404

(Advanced Econometrics—II)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. *(a)* Outline the concepts of structural and reduced form equations using the following simple Keynesian model :

$$C_t \quad a \quad bY_t \quad u_t$$
$$Y_t \quad C_t \quad I_t$$

$$0 \quad b \quad 1 \text{ and } a \quad 0$$

(All symbols have their usual meanings.)

(b) "Ordinary least square (OLS) estimators are biased and inconsistent in case of a simultaneous equation model." Verify this statement on the basis of a 2-equation model and hence compute the 'simultaneous equation bias'. 6+8=14

2. *(a)* Illustrate the identification problem of a demand-supply system with the help of Mongrel equations.

(b) Point out rank and order conditions for identification.

(c) Examine the identification status of the following model :

$$_{11}y_{1t} \quad _{12}y_{2t} \quad _{11}x_{1t} \quad _{12}x_{2t} \quad u_{1t}$$
$$_{21}y_{1t} \quad _{22}y_{2t} \quad _{21}x_{1t} \quad _{22}x_{2t} \quad u_{2t}$$

With the restriction $_{12} \quad _{21} \quad 0$.

(d) Briefly present the 2SLS method of estimation under simultaneous equation models. 4+2+4+4=14

UNIT—II

3. *(a)* You are given the following univariate time series model :

$$Y_t \quad _0 \quad _1 t \quad u_t$$

With $u_t \quad u_{t\ 1} \quad _t$, given $|\ |\ 1$ and $_t$ being a normal white noise error. Now express Y_t as a mixed process having a linear time trend and an AR (1) component. Is Y_t trend stationary? Explain briefly.

(b) Establish the result that innovations or shocks have a diminishing effect on Y_t in case of a trend stationary process but a permanent effect on Y_t for a difference stationary process. 7+7=14

4. *(a)* What is a unit root and under what circumstances does a univariate time series contain a unit root?

(b) Show that an AR (1) model is stationary while a random walk model is not.

(c) Outline the Dickey-Fuller (1976) test for detection of unit root with special reference to Davidson-Mackinnon (1993) critical values of the test statistic. 2+6+6=14

UNIT—III

5. *(a)* Point out the all important properties of integrated time series providing examples of each.

(b) Explain the terms 'cointegration', 'cointegrating equation' and 'cointegrating vector'. Elaborate the Engel-Granger method of testing for cointegration. 6+(3+5)=14

6. *(a)* What is an error correction model? How is it related to cointegration? What is the relation between error correction and Granger representation theorem?

(b) Distinguish between structural and reduced form VAR. Hence elaborate the use of VAR in testing for Granger causality between GDP and money supply. (2+2+1)+(4+5)=14

UNIT—IV

7. *(a)* Outline the use of LSDV model in case of cross-sectional panel data with few time points. How would you test whether the LSDV model is more suitable compared to the pooled estimator?

(b) In the context of fixed effects model, what are within group estimators and how are they estimated? (Assume you have a cross-sectional panel with few time points.) (5+2)+7=14

8. *(a)* Outline the use of SURE method to estimate parameters of a translog production function in four inputs—capital (K), labour (L), energy (E) and material (M).

(b) Explain how the Wu-Hausman test may be used for model selection in panel data. 7+7=14

UNIT—V

9. *(a)* Bring out the interrelations between , *t*, *F* and ^{2} statistics.

(b) Show that zero covariance between two normally distributed variables implies statistical independence.

(c) Can you use Pearsonian product moment correlation in case of binary variables? If not, what other methods can you apply to measure correlation in such cases? 4+4+6=14

10. Write brief analytical notes on any *two* of the following : 7×2=14

(a) Maximum likelihood estimation (MLE)

(b) Testing interaction effects in ANOVA

(c) Test for independence of attributes

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